

### **Remarks/Arguments**

The enclosed is responsive to the Examiner's Office Action mailed on October 02, 2007 and the Notice of Non-compliant Amendment mailed on January 17, 2008. At the time the Examiner mailed the Office Action claims 1-53 were pending. By way of the present response the Applicants have (1) amended claims 1, 9, 16, 26, 32, 36, 38, 42, and 48 (2) added no new claim, (3) cancelled no claim, (4) argued the patentability of the independent claims 1, 9, 16, 26, 32, 36, 38, 42, and 48. As such, claims 1-53 are now pending. The Applicants respectfully request reconsideration of the claims in view of the following arguments and remarks.

#### **Rejections under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph:**

In the Office Action mailed on October 02, 2007, claims 1-31 and 42-53 were rejected under 35 USC 112, 2<sup>nd</sup> paragraph.

Claims 1, 9, 16, 26, 42, and 48 have been amended to overcome this rejection. Support for the amendment can be found, inter alia, on Applicants' Specification page 17, lines 1-4, page 17 line 25 – page 18 line 2. Therefore, the Office is requested to withdraw the rejection.

#### **Rejections under 35 U.S.C. § 103(a):**

In the Office Action mailed on October 02, 2007, claims 1, 9, 16, 26, 32, 36, 38, 42, and 48 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Applicant's Admitted Prior Art (hereinafter AAPA) in view of publication entitled "Modern Operation Systems, 2<sup>nd</sup> Edition, 2001" (hereinafter TANENBAUM). This rejection is respectfully traversed because the cited prior art fails to disclose, teach or suggest all limitations set forth in the claims.

Claims 1:

AAPA in page 3 lines 14-16 discloses a general overview of term memory “overcommit”. However, this teaching is different because contrary to the claim recital, AAPA does not disclose monitoring computer resource usage of said workload, the monitoring is performed from within said workload and only for resources associated with said workload. AAPA discusses a process of memory management at a global level whereas claim 1 recites monitoring the memory and resources at a workload level. Further, AAPA does not disclose that the monitoring is done from within the workload and only for resources associated with said workload.

Similarly, AAPA in page 3 lines 16-20 discusses a process of freeing resources at a global level (i.e. OS level). This teaching is different because claim 1 recites determining a range of computer resources to make available for use by other workloads when a workload exceeds its resource limit. The Applicant would like to emphasize that AAPA teachings are different because AAPA (page 3 lines 19-20) specifically mention that the resources are being freed for the process that initiated the overcommit whereas claim recital particularly points out that the resources are freed for other workload. AAPA also fails to touch upon the matter that the monitoring and selecting is performed from within the workload itself.

TANENBAUM on page 234 section 4.6.1 discusses local versus global allocation policies. In local policy, the pages associated with a process that overcommits. The global policy, the least used pages from any process in the whole system are removed irrespective of which process overcommitted. These teachings are different because claim recites memory management of a workload that includes a plurality of process and is a part of a user space. The local policy of TANENBAUM is different because claim recited working at a workload

level and not at a process level. Similarly, the global policy of TANENBAUM is different because claim recited working of a workload level in a user space and not on a global level encompassing all processes in the system. Still further, contrary to claim recital, the monitoring in TANENBAUM is being performed on a global level even when a local policy is applied.

In a conventional system disclosed by AAPA and TANENBAUM, the monitoring of resources is not performed from within the workload. As a consequence, the global monitoring process keeps “paging out” the resources of relatively inactive processes or workloads (because least used pages in the processes running in the entire system are paged out). As a consequence, over a period of time, these relatively inactive processes are severely paged out (because they were not using the resources, hence the system took those resources and gave them to the processes that were running out of resources). Further, when these relatively inactive processes are later required to be used, it takes a substantially large amount of time to revive them because the physical memory that was paged out is now used to be reclaimed from the page storage and loaded into the physical memory. These teachings are different because claim 1 recites monitoring computer resource usage of the workload, the monitoring is performed from within said workload and only for resources associated with said workload. By providing memory management at a workload level and from within the workload itself, the workload and the processes running in the workload can decide to give up only “un-used” portion of resource allocation for the use of other workloads. Hence, all the workload and processes within remains “active” (i.e., they continue using physical memory space even though the pages are “least used”).

Therefore, AAPA or TANENBAUM, either separately or combined, fail to disclose, teach, or suggest **all limitations** set forth in claim 1.

Claim 9:

The arguments and reasoning in support of the patentability of claim 1 as discussed above are also applicable in support of the patentability of claim 9. Hence, the arguments in support of the patentability of claim 1 are being incorporated herein by reference.

As discussed above, AAPA discloses monitoring of resources at a global level. These teachings are different because claim 9 clearly recites that the monitoring is done in the user space only. Further, AAPA discloses freeing up the resources for the process that overcommits. This contrary to the claim recital which recites freeing up the resources for other workloads and not for the workload that overcommits. TANENBAUM discloses monitoring at a global level, but provides an option of resource management at either a process level or global level (i.e., in all processes in the system). These teachings are different because contrary to the claim recital, TANENBAUM does not disclose monitoring of resources within a user space only a providing memory management from within and for the resources assigned to a workload that includes a plurality running processes.

Therefore, AAPA or TANENBAUM, either separately or combined, fail to disclose, teach, or suggest **all limitations** set forth in claim 9.

Claim 16:

The arguments and reasoning in support of the patentability of claims 1 and 9 as discussed above are also applicable in support of the patentability of claims 1 and 9. Hence, the arguments in support of the patentability of claims 1 and 9 are being incorporated herein by reference.

Claim 16 is directed to a method of memory management of a workload from within the workload. The method includes accessing a list of pages of the workload and in response to a request from one process for more memory, selecting a plurality of memory pages from the list of pages. Then, initiating a second application to within the user space to page out these selected memory pages. AAPA on page 5 lines 11-12 discloses selecting pages for paging from a given workload when the workload exceeds its memory allocation. AAPA further disclose that this method is implemented as an operating system kernel. These teachings are different because contrary to the claim recited, AAPA does not use a second process within the workload for paging out. AAPA uses a global OS kernel process for all paging out operations. As explained in claim 1 arguments, AAPA does not disclose managing memory of a workload from within a workload. Hence, AAPA teachings have severe disadvantages as explained in claim 1 discussion above. Still further, as explained above, combining TANENBAUM with AAPA will not cure the disadvantages presented by AAPA. Moreover, contrary to the claim recital, even this combination does not teach managing memory of a workload from within the workload.

Therefore, AAPA or TANENBAUM, either separately or combined, fail to disclose, teach, or suggest **all limitations** set forth in claim 16.

Claim 26:

The arguments and reasoning in support of the patentability of claims 1, 9 and 16 as discussed above are also applicable in support of the patentability of claims 1, 9 and 16. Hence, the arguments in support of the patentability of claims 1, 9 and 16 are being incorporated herein by reference.

Therefore, AAPA or TANENBAUM, either separately or combined, fail to disclose, teach, or suggest **all limitations** set forth in claim 26.

Claim 32:

The arguments and reasoning in support of the patentability of claims 1, 9 and 16 as discussed above are also applicable in support of the patentability of claims 1, 9 and 16. Hence, the arguments in support of the patentability of claims 1, 9 and 16 are being incorporated herein by reference.

Claim 32 is directed to a method for memory management of a workload from within the workload. The method includes building a list of least used pages for each the workload. The workload includes a plurality of processes. AAPA on page 4 lines 20-23 discloses scanning the whole system to identify least recently used pages. This teaching is different because the claim specifically recites scanning each workload one by one to build a list of least recently used pages within each workload. As explained above, building a global list present severely disadvantages because the inactive processes are “victimized” and it becomes expensive to revive them at a later time. Further, TANENBAUM does not cure this deficiency of AAPA because TANENBAUM local policy works at a process level and not at a workload level, as recited in claim 32. TANENBAUM will not provide any help when a workload tries to manage its own memory resources for the benefit of the plurality of running processes within the workload.

Therefore, AAPA or TANENBAUM, either separately or combined, fail to disclose, teach, or suggest **all limitations** set forth in claim 32.

Claim 38:

The arguments and reasoning in support of the patentability of claims 1, 9, 16 and 32 as discussed above are also applicable in support of the patentability of claims 1, 9, 16 and 32.

Hence, the arguments in support of the patentability of claims 1, 9, 16 and 32 are being incorporated herein by reference.

Therefore, AAPA or TANENBAUM, either separately or combined, fail to disclose, teach, or suggest **all limitations** set forth in claim 38.

Claim 42:

The arguments and reasoning in support of the patentability of claims 1, 9, 16 and 32 as discussed above are also applicable in support of the patentability of claims 1, 9, 16 and 32. Hence, the arguments in support of the patentability of claims 1, 9, 16 and 32 are being incorporated herein by reference.

Therefore, AAPA or TANENBAUM, either separately or combined, fail to disclose, teach, or suggest **all limitations** set forth in claim 42.

Claim 48:

The arguments and reasoning in support of the patentability of claims 1, 9, 16 and 32 as discussed above are also applicable in support of the patentability of claims 1, 9, 16 and 32. Hence, the arguments in support of the patentability of claims 1, 9, 16 and 32 are being incorporated herein by reference.

Therefore, AAPA or TANENBAUM, either separately or combined, fail to disclose, teach, or suggest **all limitations** set forth in claim 48

Furthermore, throughout in the Office Action, the Office has used conclusory statements such as “it would have been obvious to one of ordinary skills.....”. These conclusory statements are not based on any facts disclosed by either of the cited prior art. Further, the Office has not provided any reasonable explanation or any reference as to the basis of such

conclusions. If this rejection is maintained, the Office is requested to show prima facie obviousness by presenting evidence as to how AAPA can be combined with TANENBAUM to disclose **all limitations** set forth in Applicants' claims. Please note that the Supreme Court in *KSR* noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit, *in re KSR International Co. v. Teleflex Inc. (KSR)*. The Court in *KSR* quoted *In re Kahn*, which state that “Rejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” Therefore, if this rejection is maintained, the Office is requested to provide some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.

Accordingly, the rejection of claims 1, 9, 16, 26, 32, 36, 38, 42, and 48 under U.S.C. § 103(a) is traversed. In view of the foregoing, a Notice of Allowance is respectfully requested. If the Examiner has any question that may move the case forward to allowance or has suggestions that can be worked out in advance of an action, the Examiner is respectfully requested to contact the undersigned.

If any additional fees are due in connection with filing this Amendment, the Commissioner is also authorized to charge Deposit Account No. 50-0805 (Order No. SUNMP453).

Respectfully submitted,

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